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ABSTRACT

The purpose of this study is to discover the effects of pupil race and racial balance in schools on educational achievement. A brief review of pertinent background factors and related research literature is presented, followed by an explanation of the study itself. Subjects were one hundred and sixty black and white students in the Tacoma, Washington, public schools, who ranged frcm primary tc junior high school levels. Of the 96 four-group comparisons of variables, 32 at each level, only four showed significant differences. Three of the four were racial effects, Caucasians sccring higher than Negroes in primary mathematics, intermediate language arts, and intermediate composite. No school effects were indicated at any level. The sole interaction effect indicated that Caucasians in nonsegregated schools scored higher than Caucasians in de facto segregated schools on the primary composite. Results of the study suggest that neither pupil race nor racial ccmpcsition of school per se, considered alone or interactively, seemed to have a substantial effect on academic performance when other relevant variables were controlled. (Author/JW)

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Oregon School Study Council
Eugene, Oregon

DO PUPIL RACE AND/OR SCHOOL RACIAL BALANCE AFFECT ACADEMIC PERFORMANCE?

by

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Every school administrator has responsibility for providing optimal learning environment for the children under his jurisdiction. Inasmuch as the 1954 Supreme Court decision was based on the contention that nonsegregated schools give students a better learning climate than segregated schools, it is of administrative interest to know to what extent this contention is actually true.

The following paper, excerpted from Dr. Laurent's doctoral thesis, presents an attempt to ascertain the effect on educational achievement of a pupil's race, the racial balance of a classroom, and of student interaction over a period of two or three years. Using children in a typical city of the Northwest, the writer scrutinizes groups of segregated Caucasians, segregated Negroes, nonsegregated Caucasians, and nonsegregated Negroes as to academic performance in language arts, reading, mathematics, and composite scores. Three defined educational levels make up the study population--primary, intermediate, and junior high school (ninth grade).

The findings of the study throw considerable valuable light upon this matter of administrative concern. With increasing population movement toward urban centers, especially of the West and Northwest, plus the creation of populous suburbias, the problem of achieving integrated classrooms is intensified. Changes in racial balance should be made on the basis of (1) effects on all children and (2) empirical research rather than opinion and political pressure.

--The Editors

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CHAPTER I

Introduction

School racial composition is an urgent administrative problem in urban school systems throughout America. It became a focus of attention largely as a result of the 1954 Supreme Court decision (Brown v. Board of Education, 1954) declaring de jure school segregation unconstitutional. This ruling overturned the traditional "separate but equal" doctrine under which 21 states and the District of Columbia had operated public school systems in which separation of pupils solely because of race was legally mandated or explicitly permitted.

De jure school segregation still exists in some parts of the South, but the major focus of concern has shifted in recent years to the more universal phenomenon of de facto school racial segregation in cities of the North and West. Awareness of this racial isolation, reflecting neighborhood housing patterns has been heightened by publicity concerning the demands of civil rights leaders for its abolition, related decision of lower courts, and pronouncement of public officials.

Negro and Caucasian parents alike have come to believe that the educational development of their children will suffer in a predominantly Negro school. School boards, professional educators, legislators, public administrators, the judiciary, and informed citizenry share this concern. Educational planning with respect to student body, staff, facilities, and programs has become acutely "color-conscious."

The present paper is concerned with de facto school racial segregation as it relates to academic achievement. A brief review of pertinent background factors and related research literature is presented, followed by an explanation of a study considered valuable as an appropriate model for investigating the topic. The paper concludes with the presentation of results and apparent implications for public schools.

Background

Demography

Population movements of recent decades have intensified urban racial isolation. By 1960 approximately two-thirds of both black and white Americans lived in metropolitan areas (USBC, 1968, p. 18, Table No. 16).

The proportion of Negroes living in the North and West increased from 23 per cent in 1940 to 40 percent in 1960 (USBC, 1968, p. 20, Table No. 19). In the nation's 10 largest cities, the median proportion of the Negro population rose from 17 percent in 1950 to 27.5 percent in 1960--a 62 percent increase (from USBC, 1967, p. 11). During the 1950's, while the country's total metropolitan area population skyrocketed by 23 million, 85 percent of the Negro increase was in the central cities and 90 percent of the Caucasian increase was in the suburbs (from USBC, 1968, p. 18, Table No. 17).

Clearly the continuing migration of Negroes to cities of the North and West, where their residence has been substantially limited to urban core areas, concomitant with the Caucasian exodus to the suburbs, has inevitably led to de facto racial segregation in public facilities traditionally serving on a neighborhood basis. Demographic trends suggest that this phenomenon will likely be exacerbated in time.

Judicial Legacy

In view of the desegregation decision's implications for public policy, it is unfortunate that the Supreme Court did not either attack the problem directly or clarify whether the decision was intended to apply to de facto as well as to de jure segregation. A straightforward consideration of school segregation legally prescribed on the sole basis of race might have yielded an unambiguous decision--that such segregation was flagrantly discriminatory and therefore unconstitutional. Instead the Court based its decision ostensibly on an educational premise--that "the educational and mental development of Negro children" was impaired by the pupils' attending racially segregated schools.

This reasoning of detrimental effects has been widely accepted as equally valid for both de jure and de facto segregation. Lacking clear direction, lower courts across the country have rendered diametrically opposed "color-blind" and "color-conscious" verdicts with respect to de facto school racial segregation (e.g., Bell v. School City of Gary, Indiana, 1963; Jackson v. Pasadena City School District, 1963; Lynch v. Kenston School District Board of Education, 1964; Deal v. Cincinnati Board of Education, 1965, 1966; Hobson v. Hansen, 1967).

Educational Postures

Schools face unprecedented demands for "color-conscious" behaviors as they find themselves, albeit reluctantly, thrust into the forefront of the civil rights action. They find it difficult to maintain their traditional "color-blind" stance in the face of high visibility and vulnerability to demands for social change. "Affirmative discrimination" is often prescribed by courts, legislators, and ranking public administrators. The strong inducement of generous federal funding of innovative local programs designed to reduce school racial imbalance is difficult for impoverished city school systems to ignore.

Common approaches designed to encourage de facto desegregation such as school pairing, selective grade level or school closure, judicious site selection, modification of attendance zones, optional enrollment, busing, urban/suburban cooperation, exemplary magnet programs, educational complexes, and education parks are described by the American Association of School Administrators Special Commission on School Racial Policy (AASA, 1966), Wey (1966), and the U.S. Commission on Civil Rights (USCCR, 1967a). Long-range population trends suggest that none is likely to afford more than a temporary alleviation of racial imbalance, so long as underlying housing patterns remain unchanged.

The Problem

If school racial segregation, regardless of its etiology, is detrimental to the educational development of Negro pupils, then neither the individual nor the national interest is well served by its perpetuation. If mixing pupils together on solely racial criteria enhances their educational progress, then educators have a moral imperative to ascertain the most propitious racial balance for each particular milieu and to implement it with alacrity and without external exhortation. The democratic ethic, the economic, political, and social well-being of America demand it.

If, however, the preponderance of evidence from carefully planned research studies fails to support the specific contention that Negro pupils will achieve better academically because of their attending nonsegregated schools, then the expectation of their enhanced performance cannot validly continue to be invoked as a salient reason for promotion of de facto school desegregation.

The Supreme Court's Evidence

In choosing to circumvent the direct question of constitutionality in its 1954 desegregation decision, the Supreme Court relied heavily upon contemporary psychological and sociological opinion and theory. The supporting documents were included in an Appendix to the Appellant's Briefs, Brown v. Board, supra, and consisted of general discussions and theoretical models (Myrdal, 1944; Brameld, 1949; Frazier, 1959; Clark, 1952), results of a survey of social science opinion (Deutscher and Chein, 1948), and one plea for pertinent research (Chein, 1949). The educational/psychological assumption underlying this historic decision had no experimental or quasi-experimental research base; it rested solely on logic, opinion, and theory.

Need for Study

More than a decade after the 1954 decision, Katz (1968) stated that:

> Reports on the academic progress of Negro children in desegregated schools are on the whole inadequate for drawing any conclusions about the effects of biracial environments upon Negro performance (Katz, 1968, p. 283)."

Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, and York (1966) in their monumental, though hastily executed, survey on equality of educational opportunity, recommended that "The present analysis should be complemented by others that explore changes in achievement over a large span of time" (Coleman, et al., 1966, p. 292). The U.S. Commission of Civil Rights (1967a) noted that "Prior to the Equality of Educational Opportunity survey, surprisingly little systematic research had been done on the consequences and correlates of racial isolation" (USCCR, 1967a, p. 33). President Johnson, in his charge to the USCCR prior to its 1967 study, opined with respect to de facto school segregation, "But as a first and vital step, the Nation needs to know the facts" (USCCR, 1967a, p. iv).

Problems of Design

The preponderance of evidence commonly cited as relevant to the effects of school racial composition on academic performance is only theoretical, or stems from uncontrolled, or cross-sectional, or inadequately controlled longitudinal studies. For a treatment or independent variable, such as school racial composition, to be properly described as having a possible causal relationship to a dependent or criterion variable, such as academic performance, certain conditions must be met:

1. The independent variable must have operated over a period of time, i.e., longitudinally.
2. Possible effects of other factors known to be related to the dependent variable must be adequately controlled.
3. A relationship must be demonstrated between the independent and dependent variables.

Problem Statement

The present study sought to ascertain whether academic performance of public school pupils was differentially affected by pupil race, school racial composition, or their interactive effects over a period of years. The study was concerned with both Caucasian and Negro pupils in both de facto segregated and nonsegregated schools. It was longitudinal and incorporated controls for effects of known relevant variables.

The general question to which the study addressed itself was: If Caucasian and Negro pupils are initially matched on known relevant variables, does their academic achievement after a number of years differ according to their race, the nonsegregated or de facto segregated nature of the schools they subsequently attended, or the interaction between race and school?

Subsumed under the general question were eight specific questions, each involving a comparison between two groups of pupils. The comparison groups are charted in Table 1, p. 5, with the eight comparisons upon which the questions and subsequent research hypotheses (p. 14) of the study were based. In the interests of brevity, only the first question is delineated for illustration since all questions were of similar form:

1. Are there differences in academic achievement after a period of years between groups of initially matched Negro pupils who were attending and continued to attend nonsegregated and de facto segregated schools, respectively?

Table 1

KEYED COMPARISON MATRIX FOR HYPOTHESIS TESTING

Race	Schools		Total
	Nonsegregated	De Facto Segregated	
Negro	3 ↑ 1 ↔ 5	↑ 4	↑ 8
Caucasian	↓ 6 ↔ 2	↓	↓
Total	7 ↔		

Key--
1. Negroes in nonsegregated schools v. Negroes in segregated schools.
2. Caucasians in " " " Caucasians in " " .
3. " " " " " Negroes in nonsegregated schools.
4. " " segregated " " " " segregated schools.
5. " " " " " " " nonsegregated schools.
6. " in nonsegregated " " " " segregated schools.
7. All pupils in nonsegregated " " all pupils in segregated schools.
8. Caucasians in all schools v. Negroes in all schools.

Definition of Terms

For purposes of this study certain terms are defined as follows:

Race is a term so difficult to define satisfactorily that it is seldom defined at all in studies such as this. Anthropologists themselves are not in agreement, except that all mankind is one species.

Race is used in the common social sense, after Bohannan (1963) as a categorizing term applied to individuals or groups "on the basis of socially-recognized physiological criteria" (Bohannan, 1963, p. 198). Within this context Negro refers to a person who thinks of himself and is thought of by others in his community as a Negro. Caucasian is used to describe a person

so identified by himself and others in his community. These racial definitions are used for convenience and because they reflect social realities. Specific bases for identification are not delineated but differential classification and consequent treatment are implied.

Segregation refers to separation or isolation by race. A school may be considered segregated because all or most of its enrollees are Negroes or because all or most of its enrollees are Caucasians. In the present study segregation refers to the former only, reflecting common educational and judicial usage. Segregation explicitly permitted or prescribed by law is de jure segregation; without legal sanction it is de facto segregation. A de facto segregated school is one in which the number of Negro pupils equals or exceeds 50 percent of the total enrollment, as defined by New York State (Allen, 1963). Conversely, a nonsegregated school is one in which less than 50 percent of the pupils enrolled are Negro. Definitions of a de facto segregation vary from one setting or time to another, some using a fixed percentage, others using a ratio relative to the racial proportions within the community. All definitions of the term are arbitrary. Bolner (1968) discusses several accepted and proposed definitions.

Desegregation refers to the process of eliminating segregation, either de facto or de jure. A desegregated school is one which was, but is no longer, segregated. A nonsegregated school is one which is not, and has not been, segregated. Integration is the process of developing a mutual acceptance, cooperation, and respect among members of different races within a defined group. An integrated school is one which has accomplished integration among the pupils and staff members of the school. Desegregation is thus defined quantitatively while integration connotes an additional qualitative dimension.

Summary Review of Related Literature

Correlates of Achievement

Two factors emerge as basic correlates of academic performance as measured by standardized achievement tests. They are ability or intelligence and socioeconomic status (SES). Harris (1960) and Lavin (1965) summarize studies of ability/achievement relationships. The SES/achievement relationship is documented by many, including Havighurst and Janke (1944), Chapanis and Williams (1945), Wilson (1960, 1967), and Sexton (1961).

Racial Differences

Several decades of research evidence indicates that intelligence test scores of representative random samples of Caucasians average approximately one standard deviation above those of Negroes (Shuey, 1958, 1966; Dreger and Miller, 1960, 1968; Tyler, 1965). According to Brown (1944), Shuey (1966), and Stodolsky and Lesser (1967), measured Caucasian/Negro intelligence

differences diminish when SES is controlled. McQueen and Churn (1960), and Leach (1963), found that when Caucasian and Negro children were matched on SES, sex, age, grade, and years in school, measured intelligence differences were reduced still further.

Related, promising new lines of inquiry have been opened by Semler and Iscoe (1963), Lesser, Fifer, and Clark (1965), Stodolsky and Lesser (1967), and Jensen (1969). Their findings suggest that there may be characteristic racial/ethnic profiles of cognitive abilities, and that only the profile heights vary according to SES while the shape of the profile remains the same.

The U.S. Department of Labor (1966) and Dreger and Miller (1968) document the overwhelmingly disproportionate representation of Negroes in the lower SES levels.

Implications for Design of Studies

The established intelligence/achievement and SES/achievement relationships, coupled with the disparate Caucasian/Negro intelligence and SES distributions, logically lead to the expectation of lower achievement scores for randomly selected groups of Negroes than Caucasians. Control for intelligence and SES effects would suggest that these differences might diminish or disappear. Control through randomization is obviously impossible. In this type of study, then, control can be approached only via direct or statistical matching of known relevant variables. As Dreger and Miller (1968) put it, "It is at this point probably the only way in which a measure of equating can be achieved experimentally in the United States" (Dreger and Miller, 1968, p. 15).

Studies without Adequate Controls

Many studies whose results have been inferred to causally related school racial balance and academic performance lack one or both of the prerequisites for such an inference--longitudinality and control for unknown relevant variables. Stallings (1959) reported higher gross achievement test scores for Louisville, Kentucky, school children in the years immediately after nominal de jure desegregation, with Negroes gaining more than Caucasians. There were no controls, the data were essentially cross-sectional, and the greatest gains, according to Knowles (1962), were made by Negroes remaining in segregated classrooms. Hansen (1960) found generally higher system-wide achievement scores for Washington, D. C., pupils following abolition of de jure segregation. Again there were no controls, data were not longitudinal, and nominal desegregation was accompanied by substantial educational program improvements. Katzenmeyer (1962) found greater IQ gains for Negroes than Caucasians in the first two years of schooling in Jackson, Michigan. There was no initial matching with Caucasians or with Negroes in segregated schools to permit a de facto segregated/nonsegregated school comparison. Graves and Bedell (1966) reported that Caucasian pupils in White Plains, New York, achieved as well after desegregation as before, and that Negro performance was mixed. Again, controls were lacking. Matthai (1968) noted that provision for evaluating effects of busing programs on pupil performance was typically either lacking entirely or wanting from the standpoint of methodology.

Controlled Cross-Sectional Studies

Studies in which some controls were employed for effects of variables known to be related to achievement began with Crowley (1932). She found that Negro pupils in nonsegregated Cincinnati, Ohio, schools scored higher than their matched counterparts in segregated schools in two of 13 achievement tests. Samuels (1958), studying 45 matched pairs of Negro pupils in Indiana, found that those in segregated schools scored higher on achievement tests at Grade 1; there was no difference in Grades 2 or 3; and those in racially mixed schools scored higher in Grades 4 and 6. Matzen (1965) with 1,065 pupils in the San Francisco area found that when IQ and SES were controlled there was no statistically significant relationship between mean classroom achievement test scores and classroom racial composition.

Coleman, et al., (1966) conducted the largest-scale and most authoritative survey to date, using a nationwide sampling of 600,000 pupils. His most quoted finding was that Negro pupils achieved directly as the proportion of Caucasian pupils in the school. Less publicized was the fact that this relationship virtually disappeared when appropriate controls were employed. It is indeed unfortunate that causality is commonly ascribed to the observed proportional relationship, since the study's cross-sectional design precludes the valid formulation of causal inferences from its results.

The USCCR (1967b) analyzed 95 pages of Coleman's cross-tabulations and concluded that classroom racial composition was related to academic performance of both Caucasian and Negro pupils over and above effects of classroom social class. There was no control for individual ability or SES, and the study was cross-sectional. The USCCR itself had reservations about its SES categorizations, and cautioned against hypothesizing cause and effect relationships from its findings.

Controlled Longitudinal Studies

Studies more appropriate for investigating possible causal relationships between school racial balance and academic performance have appeared in the literature only within the last dozen years. These studies were longitudinal and incorporated some controls for effects of known relevant variables.

Samuels (1958) matched Negro and Caucasian sixth-grade pupils on several pertinent factors and found greater average achievement gains for Negroes one and two years later. He concluded that Negroes achieved better in a biracial setting, although he failed to include a matched comparison group of Negroes in segregated settings, and he reported no tests of statistical significance of gain scores.

Fortenberry (1959) compared achievement gain scores two and three years later of sixth-grade groups of Negro pupils initially matched on intelligence and achievement. Half of the pupils subsequently attended segregated schools and half, nonsegregated. Results showed greater gains for nonsegregated pupils in three of six comparisons, for segregated pupils in one, and no difference

was noted in two. Fortenberry's exclusive reliance on *t* tests (over 600 of them) was questionable, as was his lack of pupil matching on SES.

St. John (1962) compared school marks and IQ scores of Negro pupils in Grade 10, controlling for sex, SES, and length of time in New England or equality of previous schooling. She concluded that there was no relationship between high school achievement and racial balance of schools attended previously.

Wolman (1964) found no difference in academic performance one year later between Negro pupils who had voluntarily moved to a nonsegregated school and a group matched on SES who remained in a segregated setting. There was no matching on ability, and the optionality of transfer characteristically attracts a biased sample.

Anderson (1966) studied matched groups of pupils in Grades 4, 5, and 6, half of whom were attending segregated schools and the other half desegregated. He concluded that, in general, pupils in desegregated schools achieved better than their counterparts in segregated schools. Anderson did not control for SES.

Radin (1966) found no significant achievement difference after six months between unequal groups of elementary school pupils in all-Negro and 45 percent Negro schools, respectively. She concluded that mere racial mixing without simultaneous compensatory education did not increase achievement of Negro pupils. No attempt was made to control via matching individual pupils, and the study was conducted over a very short time span.

Lockwood (1966) found no overall difference in average achievement test score between sixth-grade groups of Negro pupils attending de facto segregated and nonsegregated schools, respectively, after initial IQ group matching. She did find that pupils in some IQ groups scored higher in nonsegregated schools, as did some of the pupils who had attended nonsegregated schools longer. Lockwood failed to match on a pupil-to-pupil basis, and she did not match groups on SES.

Vane (1966) found no significant achievement differences at any grade level, 3 through 8, on a small sample of Negro pupils initially matched on SES and IQ, who subsequently attended nonsegregated and de facto segregated schools, respectively. This study is especially noteworthy because of its relative adequacy of matching and its long duration.

Wilson (1967), in a sophisticated study using over 4,000 pupils, found that when effects of initial ability, family background characteristics, and school social class were controlled, school racial composition had no effect on academic performance. Using regression analysis he demonstrated that there is no residual effect of school racial composition on academic achievement that cannot be accounted for by school social class. Despite a lack of upper SES school Negroes, Wilson's study is the most comprehensive to date in its field.

Lewis (1967), Weinberg (1968), and St. John (1970) provide comprehensive reviews of related literature.

CHAPTER II

Methods

The question of effects on pupil achievement of pupil race and racial balance of school attended does not lend itself to experimental investigation. It can be explored only quasi-experimentally ex post facto, describing from pupil record data what did occur in natural situations. Records must be complete enough to permit exercise of control for the effects of known relevant variables and to identify criterion performance. Both de facto segregated and nonsegregated schools must have operated over time, providing the differential "treatments" whose effects are to be compared. Finally, a school system in which these requirements are met must consent to the quest for evidence.

The Setting

The present study was conducted in the public schools of Tacoma, Washington, a predominantly industrial and military city of approximately 150,000 population. Most of Tacoma's Negroes lived near the central city area. The suburbs were almost entirely Caucasian and growing more rapidly than the city. Tacoma's urban/suburban racial and growth characteristics were typical of northern and western metropolitan America, though its percentage of Negroes was still small.

When the study began in 1963, 6.6 percent of the school system's 34,000 pupils were Negro; 91.1 percent were Caucasian. At the study's completion in 1967, 8.9 percent of the 37,000 pupils were Negro; 88.4 percent were Caucasian. The Negro proportion of school system enrollment increased 35 percent during this four-year period while the proportion of Caucasian pupils decreased 3 percent.

Four elementary and two junior high schools participated in the study. Half at each level were de facto segregated; the other half were nonsegregated. All six schools had coterminous or overlapping attendance boundaries and served a relatively homogeneous lower to lower-middle class neighborhood--the Hilltop area--in typical transition to a younger, lower income, predominantly nonwhite population. Substantially similar kinds of learning experiences were possible in all schools for pupils of a given grade level.

Selection of Subjects

The potential population for the study consisted of all pupils in the aforementioned six schools who (a) attended the same kind of school, i.e., segregated or nonsegregated, for the period under study, (b) were either Caucasian or Negro, (c) had adequate record data, and (d) progressed at the normal rate from grade level to grade level. Diminution of the population, characteristic of matching studies such as this, left a sample of 160 pupils, divided equally into four groups according to pupil race and school racial balance. Forty pupils were Negroes who had attended only de facto segregated schools for the duration of the study; 40 were Caucasians who had attended only de facto segregated schools during this time; 40 were Negroes who had attended only nonsegregated schools during the period under study; 40 were Caucasians who had attended only nonsegregated schools during this period. Table 1, p. 5, shows the four basic "treatment" groups and illustrates the resultant eight possible kinds of inter-group comparisons which form the bases for the eight research hypotheses stated on p. 14.

The study was conducted independently at each of three different educational levels:

Primary: Pupils who entered Grade 1 in the fall of 1963 and 1964 and who were in Grade 4 in the fall of 1966 and 1967, respectively. The study at this level covered a 3-year period, the populations for successive years being combined to augment the sample size to 44 pupils, 11 in each group.

Intermediate: Pupils who entered Grade 3 in the fall of 1963 and 1964 and who were in Grade 6 in the fall of 1966 and 1967, respectively. At this level, too, the study covered a 3-year period for a combined sample of 44 pupils, 11 per group.

Junior High: Pupils who entered Grade 7 in the fall of 1963, 1964, and 1965, and who were in Grade 9 in the fall of 1965, 1966, and 1967, respectively. The study at this level covered a 3-year period with combined population of 72 pupils, 18 per group.

Since the participating nonsegregated junior high school served pupils from outside as well as inside the Hilltop area, only those entering from one of the four Hilltop area elementary schools were included in the study.

Design of the Study

Studies purporting to investigate the effects on academic performance of pupil race and school racial balance have, with few exceptions, characteristically lacked one or both of the components requisite to the valid

formulation of inferences of causal relationship--longitudinality and control for the effects of variables known to be related to academic performance. The present study was designed to overcome these deficits insofar as possible via the following approach:

1. Initial direct matching of pupils from each of the four contrasted groups on variables known to be related to academic achievement--age, grade, intelligence, and SES.
2. Operation over time of the factors whose effects were being investigated--pupil race and racial balance of the school attended.
3. Terminal observation of achievement in language arts, mathematics, reading, and a battery composite, followed by statistical analysis for differences among or between the respective groups.

Variables and Instrumentation

Inherent in this study were three kinds of variables: matching, independent or treatment, and dependent or criterion.

The matching variables of chronological age and grade level in school are self-explanatory. Matching intelligence measures were provided by age equivalent scores on the Lorge-Thorndike Intelligence Test (LTIT), Separate Level Edition (Lorge & Thorndike, 1954). Level 1, Form A, of the LTIT was given to Primary pupils in Grade 1; Level 2, Form A, was given to Intermediate pupils in Grade 3; Level 4, Form A., Verbal and Nonverbal, was administered to Junior High pupils in Grade 7. SES was designated by appropriately ranking the occupation of the head of each household according to the Warner Revised Scale for Rating Occupation (WRSRO) as the final matching measure (Warner, Meeker, and Eells, 1960, pp. 140-141).

Independent or treatment variables were pupil race, divided into Caucasian or Negro, and school racial balance, dichotomized as de facto segregated or nonsegregated.

Dependent or criterion measures were pupil scores on standardized objective tests of achievement. They were selected over teacher grades because of their higher reliability and validity with respect to the measurement of general academic development. At the Primary and Intermediate levels, Sequential Tests of Educational Progress (STEP) Level 4A (STEP, 1957) fourth- and sixth-grade scores, respectively, in Reading, Mathematics, Writing, and a battery composite were used. Scores on the Iowa Tests of Educational Development (ITED) Form X-4 (ITED, 1960) Reading, Quantitative Thinking, Correctness and Appropriateness of Expression, and Composite were the Junior High criterion measures.

Since a composite STEP score is not provided by the publisher a T-score scale was constructed from data in the STEP Technical Report (STEP TR, 1957, pp. 23-24) for each of the five tests on record for each pupil--Mathematics, Reading, Writing, Science, and Social Studies. T scores thus derived were used in all STEP calculations, and a STEP composite for each pupil was obtained by averaging his five test T scores. Published standard scores were used for all ITED calculations.

Table 2 illustrates the chronology and instrumentation.

Table 2

CHRONOLOGICAL AND INSTRUMENTATION DIAGRAM

Level	Year					Grades
	1963	1964	1965	1966	1967	
Primary	[LTIT ———			STEP	]	1 to 4
	[	LTIT ———			STEP]	
Intermediate	[LTIT ———			STEP	]	3 to 6
	[	LTIT ———			STEP]	
Junior High	[LTIT ———	ITED			]	7 to 9
	[	LTIT ———	ITED		]	
	[		LTIT ———		ITED]	

Procedure

All data used in this study were compiled from pupils' permanent records. Questionable data were clarified through direct questioning of knowledgeable staff members.

All standardized test data were obtained from results of tests routinely administered by classroom teachers and/or counselors as a part of the regular system-wide basic testing program. The tests, excepting the 1963 LTIT at the Primary and Intermediate levels, were scored and reported commercially. Testing was done in early fall of each school year.

Matching of pupil characteristics by visual inspection at each level began with the quadrant, or group, having the smallest population and proceeded to the second, third, and fourth least populous quadrants in order. Best matches were made, insofar as possible, in all cases, with random selection used where several matches were equally good.

Preliminary testing of all matching variables at each level for homogeneity of means and variances among the four contrasted groups of pupils revealed no significant differences at the .05 level. Means were tested by analysis of variance (after Ferguson, 1966, pp. 291-293) and variances were tested by Hartley's test (in Winer, 1962, pp. 93-94).

Hypotheses

The null hypotheses tested at each level stem directly from the questions on pp. 4-5 and from the Matrix of Comparisons, Table 1, page 5. All hypotheses were nondirectional; consequently, all tests were two-tailed. The .05 level of significance was selected as indicative of a difference, or differences, among means of contrasted groups. The general null hypothesis is:

> Caucasian and Negro pupils who were matched on variables known to relate to achievement do not differ in academic achievement after a period of years according to their race, the nonsegregated or de facto segregated nature of schools they subsequently attended, or the interaction between pupil race and racial balance of school attended.

In this form the hypothesis is too general to lend itself to testing. Therefore, the subsumed specific and testable null hypotheses are as follows:

H_1: Groups of Negro pupils who were matched by grade level, chronological age, mental age, and socioeconomic status, and who were attending and continued to attend nonsegregated and de facto segregated schools, respectively, do not differ after a period of years with respect to academic achievement.

H_2: Same as H_1, but replace "Negro" with "Caucasian."

H_3: Groups of Negro and Caucasian pupils who were matched by grade level, chronological age, mental age, and socioeconomic status, and who were attending and continued to attend nonsegregated schools do not differ after a period of years with respect to academic achievement.

H_4: Same as H_3, but replace "nonsegregated" with "de facto segregated."

H_5: Groups of Negro and Caucasian pupils who were matched by grade level, chronological age, mental age, and socioeconomic status, and who were attending and continued to attend nonsegregated and de facto segregated schools, respectively, do not differ after a period of years with respect to academic achievement.

H_6: Same as H_5, but "nonsegregated" and "de facto segregated" are reversed.

H_7: Groups of pupils who were matched by grade level, chronological age, mental age, and socioeconomic status and who were attending and continued to attend nonsegregated and de facto segregated schools, respectively, do not differ after a period of years with respect to academic achievement.

H_8: Groups of Negro and Caucasian pupils who were matched by grade level, chronological age, mental age, and socioeconomic status do not differ after a period of years with respect to academic achievement.

Statistical Treatment of Data

In this study control for effects of known relevant variables was sought by way of direct matching on these variables. Control through randomization was not possible since assignment to groups was predetermined. The remaining alternative, control via analysis of covariance, was viewed as offering but little advantage, and as raising serious doubt that fulfillment of its multiple underlying assumptions could be approached.

Given a direct matching design, four contrasted groups, and a salient question of possible interaction effects, a 2 x 2 factorial analysis of variance (ANOVA) design (Lindquist, 1953, Ch. 9, following computational model on pp. 114-117) was selected to test the hypotheses. This design permitted the testing of all hypotheses at one level simultaneously with respect to any given criterion measure of academic achievement.

Significant race (row) or school (column) effects were revealed directly by inspection of ANOVA summary tables. Indicated significant interaction effects required a posteriori testing in order to isolate the specific difference or differences between means of ordered pairs. The Tukey (a) technique was selected for this analysis, following recommendations of Winer (1962), and Petrinovich and Hardyck (1969) because of its preservation of alpha as the maximum level of significance and its relative ease of application. The Tukey (a) procedure is explained in Winer (1962, p. 87) following a generalized model for tests on all pairs of ordered means (1962, p. 82).

All calculations were performed and checked on an electronic calculator. All analyses of variance were re-run on an Olivetti-Underwood Programma 101 desk-top computer.

Limitations of the Study

Results of any study are appropriately interpreted only in the light of its methodological and situational limitations. Major concerns center around the possible (a) introduction of bias through error in identification of the sample or measurement of variables, (b) constraints imposed by the circumstances within which the study is conducted, (c) impropriety of the design for testing the general hypothesis, and (d) inappropriateness or inaccuracy of statisitcal methodology or computation.

School record data are vulnerable to error. The present study necessarily relied on these data under the assumption that such informational, recording, or transcribing errors as may have occurred were random and few and introduced no bias. All feasible mechanical precautions were taken to insure accuracy of test scoring and reporting, from careful preliminary preparation of response documents on through use of the best available electronic data processing facilities. SES rating was somewhat subjective at best, but since the entire eligible population at each level was rated at the same time without identification of group membership, any inaccuracies were consistent across all groups and thus without comparative bias.

The present study was conducted within a framework of real world constraints typical of many northern communities still in the emergent stages of racial segregation in their schools. Although the sample size was the maximum possible in the particular setting and within the specific requirements, it was not large. The duration of the study was only moderate, though its inception followed immediately upon the first documented identification of any schools in the system as de facto segregated. With such presumably recent Negro majorities in any school it was possible that any changes in school standards, morale, or reputation, which may accompany a school's transition from an arbitrary designation as nonsegregated to de facto segregated may not yet have occurred. The SES range was generally restricted to the lower end of the continuum, and it is possible that the question under study has different effects at different SES levels.

Matching was chosen as the most appropriate design with which to study the question of effects on academic performance of pupil race and school racial balance. Matching, however, necessarily introduced bias--first, by eliminating extreme cases because they could not be matched, and second, by omitting many cases in the numerically larger quadrants because there were not enough cases in the numerically smaller quadrants to match to them. Differential interschool mobility and retention or acceleration rates in nonsegregated versus de facto segregated schools, neither ascertained, may have affected results.

Racial balance of classroom was not considered. This study addresses itself to the controversies of public record, which are concerned with segregation at the school level. This was the unit with which the Supreme Court was concerned in the Brown v. Board of Education, supra, decision, and that with which lower courts, civil rights leaders, and school boards have contended. The arbitrary dichotomy of schools as de facto segregated or nonsegregated was used for the same reason, rather than seeking to discover whether there was an optimal racial balance along a continuum.

The limitations of the study are real and its findings must be interpreted in that light. Despite precautions, the sample may have been biased or the variables may have been inaccurately measured. The general design seemed adequate and the statistical techniques appropriate. The novelty, localization, and limited extent of segregation in the community, the consequently small sample size, restricted SES range, and relatively short duration of the study made this less than an optimal test of the hypotheses.

CHAPTER III

Results

Summary tables of criterion score data and 2 x 2 factorial analysis of variance (ANOVA) results for each measured achievement area are presented for each of the respective "experimental" levels in turn. In the ANOVA model used to treat the criterion data, results of two of the eight kinds of comparisons at each level are read directly from the summary table. Differences between kinds of schools (H_7) are read as column effects and appear on the first line. Differences between races (H_8) are read as row effects, on line 2. Differences in one or more of the remaining six comparisons (H_1 - H_6) manifest themselves as interaction effects on line 4. Specific interaction differences, identified via the Tukey (a) a posteriori method, are noted under the appropriate ANOVA tables.

Primary Level

Criterion score summary data reported in Table 3 suggest that Caucasian pupils in de facto segregated schools achieved less well than their counterparts in nonsegregated schools or, with one exception, their Negro classmates. They further suggest that there was little difference in mean scores between Negro pupils who attended de facto segregated schools and their counterparts who attended nonsegregated schools except in Writing, where the former scored higher.

Table 3

CRITERION T-SCORE SUMMARY DATA: PRIMARY LEVEL, GRADE 4

	Negro				Caucasian			
	Nonsegregated		Segregated		Nonsegregated		Segregated	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Mathematics	44.3	4.3	42.7	4.7	49.6	6.8	46.5	4.8
Reading	44.2	9.3	45.4	5.8	47.6	9.1	41.8	4.6
Writing	42.8	8.2	48.4	7.6	48.2	9.9	42.1	4.7
Composite	44.6	5.5	46.0	3.5	49.6	6.6	43.8	3.6

Note.--n = 11 for each column.

Results of application of ANOVA to the T-score data from which Table 3 was derived are shown in Table 4, page 19.

Mathematics: H_8, which holds that there is no overall mean difference between scores of Caucasians and Negroes, was rejected. Caucasians appeared to score significantly ($p < .01$) higher than Negroes.

Reading: None of the eight null hypotheses was rejected. There appeared to be no race, school racial balance, or interaction effects.

Writing: Although the presence of an interaction effect was indicated, a posteriori testing failed to reveal significant differences between any pair of ordered means. Consequently, none of the eight hypotheses was rejected. There appeared to be no race, school racial balance, or interaction effects.

Composite: The presence of only an interaction effect was indicated. A posteriori testing identified a significant ($p < .05$) difference between mean scores of Caucasian pupils in non-segregated schools and their counterparts in de facto segregated schools. H_2 was rejected; Caucasians in non-segregated schools appeared to score higher than Caucasians in segregated schools.

Table 4

ANALYSIS OF VARIANCE SUMMARY TABLES: PRIMARY LEVEL, GRADE 4

Table 4.1

MATHEMATICS

Source	df	MS	F
Schools (C)	1	61.46	2.42
Races (R)	1	227.27	8.95*
(Cells)	(3)		
Interaction (RC)	1	7.36	.29
Within Cells	40	25.39	
Total	43		

*p < .01

Table 4.2

READING

Source	df	MS	F
Schools (C)	1	59.11	1.06
Races (R)	1	.02	0.00
(Cells)	(3)		
Interaction (RC)	1	134.75	2.41
Within Cells	40	55.96	
Total	43		

Table 4.3

WRITING

Source	df	MS	F
Schools (C)	1	.82	.01
Races (R)	1	2.27	.04
(Cells)	(3)		
Interaction (RC)	1	372.36	6.13*
Within Cells	40	60.77	
Total	43		

*p < .05 Tukey (a) testing revealed no significant differences.

Table 4.4

COMPOSITE

Source	df	MS	F
Schools (C)	1	50.21	2.03
Races (R)	1	21.84	.89
(Cells)	(3)		
Interaction (RC)	1	141.84	5.75*
Within Cells	40	24.68	
Total	43		

*p < .05

Intermediate Level

Table 5 criterion score summary data suggest that Negro pupils in de facto segregated schools achieved less well than their counterparts in nonsegregated schools or Caucasian pupils in either segregated or nonsegregated schools. Further, Caucasian pupils generally appeared to do better than Negro pupils generally in all test areas.

Table 5

CRITERION T-SCORE SUMMARY DATA: INTERMEDIATE LEVEL, GRADE 6

	Negro				Caucasian			
	N = 11 Nonsegregated		N = 11 Segregated		N = 11 Nonsegregated		N = 11 Segregated	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Mathematics	46.4	7.8	42.7	8.7	48.9	8.6	49.9	10.8
Reading	50.1	9.1	43.8	7.6	52.9	10.1	51.0	9.6
Writing	47.7	8.5	41.4	8.0	51.9	8.8	52.7	8.1
Composite	48.3	6.3	42.1	7.4	49.9	7.9	51.2	8.2

ANOVA results from T-score data are reported in Table 6, page 21.

Mathematics: None of the eight null hypotheses was rejected. There appeared to be no race, school racial balance, or interaction effects.

Reading: None of the eight null hypotheses was rejected. There appeared to be no race, school racial balance, or interaction effects.

Writing: H_8, which holds that there is no overall mean difference between scores of Caucasians and Negroes, was rejected. Caucasians appeared to score significantly ($p < .01$) higher than Negroes.

Composite: H_8, which holds that there is no overall mean difference between scores of Caucasians and Negroes, was rejected. Caucasians appeared to score significantly ($p < .05$) higher than Negroes.

Table 6

ANALYSIS OF VARIANCE SUMMARY TABLES: INTERMEDIATE LEVEL, GRADE 6

Table 6.1

MATHEMATICS

Source	df	MS	F
Schools (C)	1	19.11	.23
Races (R)	1	260.21	3.19
(Cells)	(3)		
Interaction (RC)	1	59.11	.73
Within Cells	40	8.156	
Total	43		

Table 6.2

READING

Source	df	MS	F
Schools (C)	1	184.09	2.21
Races (R)	1	275.00	3.31
(Cells)	(3)		
Interaction (RC)	1	52.36	.63
Within Cells	40	83.19	
Total	43		

Table 6.3

WRITING

Source	df	MS	F
Schools (C)	1	84.57	1.21
Races (R)	1	664.57	9.47*
(Cells)	(3)		
Interaction (RC)	1	141.84	2.02
Within Cells	40	70.15	
Total	43		

*$p < .01$

Table 6.4

COMPOSITE

Source	df	MS	F
Schools (C)	1	66.27	1.19
Races (R)	1	316.45	5.66*
(Cells)	(3)		
Interaction (RC)	1	152.82	2.73
Within Cells	40	55.94	
Total	43		

*$p < .05$

Junior High School Level

Table 7 criterion score summary data fail to suggest systematic differences in academic performance among the four contrasted groups of pupils.

Table 7

CRITERION STANDARD SCORE SUMMARY DATA:
JUNIOR HIGH SCHOOL LEVEL, GRADE 9

	Negro				Caucasian			
	Nonsegregated		Segregated		Nonsegregated		Segregated	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Mathematics	9.4	2.6	8.9	3.5	8.4	3.2	9.8	4.0
Reading	10.4	2.7	10.9	3.3	11.4	4.2	9.8	4.3
English	10.3	4.7	10.7	3.4	10.6	5.1	10.7	4.1
Composite	10.1	3.1	10.4	3.7	9.9	4.6	10.1	4.6

Note.--n = 18 for each column.

Table 8, page 23, reports ANOVA results for scores of the four contrasted groups of pupils. There were no significant F ratios on any of the four tested areas, hence none of the eight null hypotheses was rejected for any area. There was no evidence of race, school racial balance, or interaction effects in any of the four tested areas.

Summary of Results

The findings presented above indicated that there were very few significant differences in academic performance among the groups of pupils compared. Of the 96 specific hypotheses tested--eight with respect to each of the four criterion variables at each of the three defined educational levels--only four differences were found. The general finding, then, was that there is little evidence that academic performance is affected by pupil race, school racial balance, or their interaction. Table 9, page 24, summarizes the results.

Table 8

ANALYSIS OF VARIANCE SUMMARY TABLES: JUNIOR HIGH SCHOOL LEVEL, GRADE 9

Table 8.1

MATHEMATICS

Source	df	MS	F
Schools (C)	1	3.13	.28
Races (R)	1	0.13	.01
(Cells)	(3)		
Interaction (RC)	1	17.01	1.51
Within Cells	68	11.29	
Total	71		

Table 8.2

READING

Source	df	MS	F
Schools (C)	1	5.56	.41
Races (R)	1	.06	.00
(Cells)	(3)		
Interaction (RC)	1	20.06	1.48
Within Cells	68	13.59	
Total	71		

Table 8.3

ENGLISH

Source	df	MS	F
Schools (C)	1	1.12	.06
Races (R)	1	.35	.02
(Cells)	(3)		
Interaction (RC)	1	.12	.01
Within Cells	68	19.21	
Total	71		

Table 8.4

COMPOSITE

Source	df	MS	F
Schools (C)	1	1.13	.07
Races (R)	1	1.13	.07
(Cells)	(3)		
Interaction (RC)	1	.01	.00
Within Cells	68	16.44	
Total	71		

Table 9

SUMMARY OF RESULTS OF STATISTICAL ANALYSES

Type of Ho.*	Primary				Intermediate				Junior High School			
	Math.	Read.	Writ.	Comp.	Math.	Read.	Writ.	Comp.	Math.	Read.	Eng.	Comp.
1	———	———	———	———	———	———	———	———	———	———	———	———
2	———	———	———	C/NS>C/S, $p<.05$	———	———	———	———	———	———	———	———
3	———	———	———	———	———	———	———	———	———	———	———	———
4	———	———	———	———	———	———	———	———	———	———	———	———
5	———	———	———	———	———	———	———	———	———	———	———	———
6	———	———	———	———	———	———	———	———	———	———	———	———
7	———	———	———	———	———	———	———	———	———	———	———	———
8	C>N, $p<.01$	———	———	———	———	———	C>N, $p<.01$	C>N, $p<.05$	———	———	———	———

*Type of hypothesis or comparison (see Table 7, page 124).

Legend: C = Caucasian, N = Negro, NS = Nonsegregated, S = Segregated.

Effects of Race

Effects of pupil race (H_8) were tested directly for each of the four criterion achievement measures at each of the three levels. Significant differences were found in three of the 12 comparisons, all in favor of Caucasians--in Primary Mathematics, Intermediate Writing, and Intermediate Composite. It was concluded that pupil race did seem to have some effect on academic performance, irrespective of school racial balance, and that effect favored Caucasian pupils.

The superior academic performance of unselected groups of Caucasian, compared with Negro, pupils is amply documented. Comparisons over time between groups initially matched on known correlates of achievement, however, are rare. In the only study found directly relative to this point, Samuels (1958), incidentally to the main concern of his study, found that Caucasians made higher achievement scores at Grade 8 than did Negroes with whom they had earlier been matched. Results of the present study, then, support those of Samuels.

Effects of School Racial Balance

Effects of school racial balance (H_7) were tested directly for each of the four criterion achievement measures at each of the three levels. No significant differences were found in any of the 12 inter-group comparisons. It was concluded that school racial composition per se had no effect on the academic performance of pupils, irrespective of pupil race.

Interaction Effects

Six kinds of pupil race/school racial composition interactions (H_1 - H_6) were tested simultaneously for each of the four criterion achievement measures at each of the three levels. The only significant difference found in the 72 inter-group comparisons indicated that in the Primary Composite, Caucasians in nonsegregated schools achieved better than their counterparts in de facto segregated schools (H_2). It was concluded that there was an apparent interaction effect at the Primary level suggesting that attendance at de facto segregated schools was detrimental to the academic performance of Caucasian pupils.

No effects were found suggesting that academic performance of Negro pupils was related to an interaction between their race and the racial balance of schools they attended (H_1). No effects were found suggesting that academic performance of pupils in either nonsegregated (H_3) or de facto segregated (H_4) schools, respectively, was affected by pupil race. No effects were found suggesting that academic performance of pupils was affected by other pupil race/school racial balance interactions (H_5, H_6).

No other controlled, longitudinal, four-group or two-group studies were found with whose outcomes results of the present study could be compared.

CHAPTER IV

Summary and Implications

Methods

The purpose of this study was to ascertain the effects on educational achievement of pupil race, racial balance of school attended, and their interaction over a period of years. For purposes of this study pupils were dichotomized as Negro or Caucasian; schools were categorized as de facto segregated or nonsegregated. A de facto segregated school was defined as one having 50 percent or more Negro enrollees.

Subjects for the study were 160 pupils in the Tacoma, Washington, public schools. Forty were Negroes who had attended de facto segregated schools for the duration of the study; 40 were Caucasians who had attended de facto segregated schools during this time; 40 were Negroes who had attended nonsegregated schools during the period under study; 40 were Caucasians who had attended nonsegregated schools during this period.

The study was conducted at three different educational levels: Primary, Intermediate, and Junior High School. The sub-population at each level contained equal numbers of pupils from each of the four contrasted groups. Within each level subjects were initially matched person-for-person from group-to-group on the known relevant variables of chronological age, grade, mental age and socioeconomic status. The Primary level included 44 pupils, 11 in each group, who were studied over the three-year period from early in Grade 1 till early in Grade 4. The Intermediate level also included 44 pupils, 11 in each group, who were studied over the three-year period from early in Grade 3 till early in Grade 6. At the Junior High level 72 pupils, 18 in each group, were studied over the two-year period from early in Grade 7 till early in Grade 9.

Four elementary and two junior high schools participated in the study. Half of the schools at each level were de facto segregated; the other half were nonsegregated. All schools had coterminous attendance boundaries and served the same relatively homogeneous lower to lower-middle class neighborhood. Schools were essentially similar at each level with respect to staffing, facilities and educational programs.

Lorge-Thorndike Intelligence Test mental age scores provided the matching intelligence measures. Father's occupational level according to the Warner Revised Scale for Occupation was used as the measure of socioeconomic status.

Pupil race and racial balance of school attended were the independent or treatment variables. Dependent or criterion achievement measures were language arts, mathematics, reading and battery composite scores on the Sequential Tests of Educational Progress at the Primary and Intermediate levels, and similar scores on the Iowa Tests of Educational Development at the Junior High level.

The study was ex post facto, describing what took place in the natural course of events, the design was: Matching--"treatment" over time--observation.

A 2 x 2 factorial analysis of variance was used to determine whether racial, school racial compositions or interaction differences existed among the four groups of pupils at each level on each criterion measure. The .05 level of significance was accepted as indicating existence of a difference. The Tukey (a) Technique was employed a posteriori to locate indicated interaction difference.

Findings

Of the 96 four-group comparisons, 32 at each level, only four showed significant differences. Three of the four were racial effects, Caucasians scoring higher than Negroes in Primary Mathematics, Intermediate Language Arts and Intermediate Composite. No school effects were indicated at any level. The sole interaction effect indicated that Caucasians in nonsegregated schools scored higher than Caucasians in de facto segregated schools on the Primary Composite.

Results of the study suggested that neither pupil race nor racial composition of school per se, considered alone or interactively, seemed to have a substantial effect on academic performance when other relevant variables were controlled.

Discussion of Results

The general findings of this investigation support results of carefully planned research studies executed in other locales (St. John, 1962; Vane, 1966; Wilson, 1967), that there is little evidence from which to infer a direct causal relationship between school racial composition and academic performance when appropriate controls have been exercised for the possible effects of known relevant variables. Even less adequately designed studies (Wolman, 1964; Radin, 1966) have found this same lack of relationship.

The finding of the present study, that attending de facto segregated schools appeared to have a detrimental effect on the educational development of Primary level Caucasian pupils, is novel insofar as is known. Most studies in this area have been concerned simply with comparative performance of Negro

pupils in schools of different racial balances. The present result must be regarded as highly tentative, but its occurrence suggests that future studies investigating the effects of school racial composition on academic performance might well provide for a similar comparison.

The fact that Caucasian pupils apparently out-performed their initially matched Negro counterparts over time, in the few instances where there was a difference between the two groups, is also a relatively novel finding, again reflecting common limitations of design.

Although the proportionate frequency of these novel results was relatively small with respect to the overall scope of the present study, their nature and potential impact on desegregation ideology, should they be corroborated elsewhere, mandates replication of this study or implementation of other designs facilitating similar comparisons. A wealth of pupil record data in cities across the country awaits exploration to contribute to our knowledge in this critical area.

Implications

Within the past decade America's urban school systems have become primary instrumentalities of social reform in the current civil rights revolution. While the role of societal change agent is neither novel nor inappropriate for the public schools, education's informational base leading to its present posture with respect to de facto school racial segregation merits careful scrutiny.

The Supreme Court's reasoning in the Brown v Board, supra, desegregation decision of 1954 made it inevitable that the schools would be in the forefront of the civil rights struggle. The Court held that attendance at racially segregated schools had a detrimental effect on the educational development of Negro pupils so segregated, especially when the segregation was sanctioned by law. Although the Court's concern was ostensibly with the de jure segregation common in southern and border states, validity of the underlying educational premise typically has not been questioned by lower courts, legislators, public administrators, school personnel, or parents with respect to de facto segregation in cities of the North and West.

In 1954 the Supreme Court's contention that Negro pupils in segregated schools achieved less well than did their counterparts in nonsegregated schools was supported only by logic and theory, not by field research data. The accumulated evidence from carefully planned research studies over the intervening 16 years has failed to demonstrate conclusively that there is a causal relationship between school racial balance and academic performance. St. John (1970) reviews the major pertinent studies, describes the complexities of investigating the problem, and concludes that there have not yet been any really adequate tests of the hypothesis.

The controversy over de facto school racial segregation and quality of educational opportunity has dramatically highlighted the inadequate data base from which the educational enterprise is characteristically conducted. As Dyer (1968) so aptly put it:

> One of the great unsolved problems of American education, or of education anywhere in the world, is that of providing a continuous flow of dependable information on how well the schools are meeting the developmental needs of children and in what respects they are failing to do so . . .
>
> Until such information is forthcoming at regular intervals and in large quantities, it is reasonably certain that in spite of large infusions of money and the frenzied innovations that money may bring, the schools will become increasingly inconsequential in helping us toward a viable society (Dyer, 1968, pp. 55-56).

Bloom (1969) maintains that "The improvement of education and other environments is really the only means available to a civilized society for the improvement of the lot and fate of man" (Bloom, 1969, p. 6). Assuming that educators are striving for improvement, how can they know when it has occurred unless they are aware of where they were, where they are, and where they are headed? To achieve the informational base required for a viable educational system, educators must overcome their propensity for simply initiating action programs and make a concerted effort to comprehend the need for commitment to, and provision for, an evaluative schema within which to purposefully and systematically acquire, analyze, and appropriately respond to pertinent data. Without such an orientation, public education cannot possibly demonstrate the integrity of accountability which, if not initiated from within the profession, is increasingly certain to be demanded from without.

Admittedly, academic performance is but one of many goals of American education. Its attainment has not been conclusively related to school racial balance, per se. Nichols' (1968) reaction to recommendations of the U.S. Commission on Civil Rights (USCCR, 1967a, pp. 209-212) for further de facto desegregation action is appropriate:

> The evidence indicating that racial composition of the schools is related even marginally to achievement is equivocal, and there is no evidence at all to support the hope that integration will somehow result in dramatic gains for Negro students. Desirable as integration may be for social and political reasons, the Commission may be setting the Negro up for yet another disillusionment by promoting school integration as a means of achieving equality of performance.
>
> It would be a sad result indeed if, in our enthusiasm for a possibly meritorious solution, we become so convinced that we know the answer that we fail to intensify the research attack on our massive ignorance of the determinants of individual differences in ability and school achievement (Nichols, 1968, p. 707).

Integrity seems to suggest consideration of alternative behaviors. One would be simply to cease further efforts to reduce de facto segregation since it has not as yet shown substantial signs of achieving its avowed original purpose. A second would be to proclaim that schools are primarily agents of social change and only secondarily educational institutions. De facto desegregation could then be openly promoted for political and/or social, rather than academic, reasons. Of course, this would be no more acceptable than the present modus operandi unless the expectation of salutary effects could be supported by research results.

The most defensible, and most difficult approach, so long as children are being considered primarily as members of racial groups rather than as individuals, would be to plan and implement the most adequate longitudinal and controlled pertinent research feasible in an effort to build a respectable evidential base upon which to predicate further action. As Griffiths (1959) said:

> We should adopt the point of view that ideas should not be tried on children until there is some large amount of evidence that the ideas are workable and the results will be beneficial (Griffiths, 1959, p. 31).

Opportunity for economic, educational, political, and social movement is an inherent strength of our society. It must be kept freely available to all according only to demonstrated merit. Education can facilitate this mobility only so long as it respects the individuality of every child it serves. The basic tenets of education espouse respect for individual uniqueness and the provision of learning experiences according to individual needs. How can these be reconciled with the logic of subverting a child's identity as an individual to his consideration as a racial or ethnic manifestation? With equal validity could he not be categorized for educational purposes according to his sex, religion, socioeconomic status, handedness, eye color, or shoe size? Demographic pigeonholing, the simplistic practice of sorting people out by some natural grouping, such as race, is not only antithetical to the democratic ethic but diametrically opposed to heretofore accepted exemplary educational practice.

National concern has been directed toward the alleged detrimental effects of de facto school segregation on the academic performance of Negro pupils. Evidence to date fails to support the validity of that circumscribed focus of concern. It must also be directed toward Caucasian pupils, Orientals, American Indians, Mexican-Americans, and Puerto Ricans. Indeed, it must be with every child who enters the portals of public education in the United States. And the concern must be that public policy and practice at every level be solidly based, insofar as feasible, on empirical research evidence rather than solely on logical and theoretical persuasions or political pressures, lest it be forgotten that the charge of public education is ". . . to find alternative means of bringing all children as far as we can toward self-fulfillment" (Cronbach, 1969, p. 340).

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